

WHAT IS CLAIMED IS:

1. A honeycomb structure comprising: porous partition walls disposed so as to form a plurality of cells extending in an axial direction, wherein defining that a porosity of the partition walls in a central portion of a vertical section with respect to the axial direction of the honeycomb structure is P_i and that a porosity of the partition walls in an outer peripheral portion of the section is P_o , a relation is $P_i < P_o$.

10 2. The honeycomb structure according to claim 1, wherein defining that a pore diameter of the partition walls in the central portion is D_i and that a pore diameter of the partition walls in the outer peripheral portion is D_o , a relation is $D_i > D_o$.

15 3. The honeycomb structure according to claim 1, wherein the D_i and D_o have a relation of $D_i < D_o$.

4. A honeycomb structure comprising: porous partition walls disposed so as to form a plurality of cells extending in an axial direction, wherein defining that a porosity and a pore diameter of the partition walls in a central portion of a vertical section with respect to the axial direction of the honeycomb structure are P_i and D_i and that a porosity and a pore diameter of the partition walls in an outer peripheral portion of the section are P_o and D_o , relations are $P_i > P_o$ and $D_i < D_o$.

5. The honeycomb structure according to claim 1, wherein a predetermined cells are plugged at either of end faces of the honeycomb structure.

6. The honeycomb structure according to claim 2,

wherein a predetermined cells are plugged at either of end faces of the honeycomb structure.

7. The honeycomb structure according to claim 3,
wherein a predetermined cells are plugged at either of end
5 faces of the honeycomb structure.

8. The honeycomb structure according to claim 4,
wherein a predetermined cells are plugged at either of end
faces of the honeycomb structure.

9. The honeycomb structure according to claim 1,
10 wherein the honeycomb structure is monolithically formed.

10. The honeycomb structure according to claim 2,
wherein the honeycomb structure is monolithically formed.

11. The honeycomb structure according to claim 3,
wherein the honeycomb structure is monolithically formed.

12. The honeycomb structure according to claim 4,
15 wherein the honeycomb structure is monolithically formed.

13. The honeycomb structure according to claim 5,
wherein the honeycomb structure is monolithically formed.

14. The honeycomb structure according to claim 6,
20 wherein the honeycomb structure is monolithically formed.

15. The honeycomb structure according to claim 7,
wherein the honeycomb structure is monolithically formed.

16. The honeycomb structure according to claim 8,
wherein the honeycomb structure is monolithically formed.